

DRAFT
OHIO COST SAVINGS GROUP
REPORT ON UNDERGROUND PIPELINE ESTIMATES

Background

During the January 30th OCSG Meeting at the MEMP, the C&DC Team agreed to move forward on a strategic approach for deploying the pipe explorer at DOE-OH sites. Their first objective for representatives from each site was to determine whether there were any opportunities to reduce remediation cost by leaving uncontaminated underground pipelines in place. If there were, site representatives were asked to derive a 'rough-order-of-magnitude' estimate of underground piping at their site. The approach is described in Attachment A. The following is a summary of the responses/information received from each site.

Ashtabula Environmental Management Project (AEMP)

(The following was provided by Al Lumbacher)

Based on information and assumptions from the AEMP Baseline Review, there is approximately 8700 linear feet of buried piping (2"-30" diameter.) at the site. A gross estimate of 50% of this total is located directly under building foundations approximately 36" below grade. This piping would be excavated during foundation remediation.

The remaining half is buried piping in open areas, much of it at depths to 15 feet (mostly storm sewer lines) for which the Pipe Explorer would be applicable. One concern, from the 1/30/01 presentation by Dave Cremer of SEA, Inc., is that the explorer has a demonstrated length of 365' (the 150' limit was apparently with 8 pipe elbows). Some of the storm sewers on site have lengths in excess of 500', so we would need to work out access from at least two directions.

One other possible application of the Pipe Explorer might also be in sub-surface characterization. If hot spots would be identified in the piping it might be used as a tool to focus other sub-surface soil technologies (as opposed to the hit or miss approach with drilling). This approach could be used prior to removal of building slabs.

Columbus Environmental Management Project (CEMP)

The CEMP estimated that they had approximately 8800 lineal feet of underground pipe at the West Jefferson Facility. By deploying the pipe explorer, they were able to leave 3700 lineal feet of uncontaminated pipe in the ground for an estimated cost savings of \$5.2 million. This equates to roughly \$1400 per foot of pipe.

Fernald Environmental Management Project (FEMP)

(The following was extracted from email discussions between Janke and White)

FEMP has stated that the OU3 ROD already locks in future action for underground pipes. They agree that it would be nice to use in there to eliminate their need to excavate clean pipe, especially the sewer and storm water pipes in area on site where they don't need to excavate soil. However, they are not certain they could use any "decisions" from the pipe explorer to change a remediation action.

They noted that piping in the production does not need to be scanned via a pipe explorer technology since visual inspection is sufficient and that all piping within the production need to be removed to accommodate the excavation plans. They do not have a choice to leave piping in place within the production area.

Outside the production area the piping whose excavation could be potentially avoided consists of the outfall piping and the extraction well network piping. For the outfall piping, there are two different pipes. The old effluent line consists of a ductile iron pipe with fairly high levels of fixed contamination. They do not believe DOE or EPA would be inclined to leave this line in place. The new effluent line and the extraction well network piping consist of high-density polyethylene that will not become contaminated and therefore does not need to be evaluated.

A regulatory decision to leave these plastic piping systems in the ground could be made independent of the pipe explorer technology. The corridor areas, which contain the underground piping systems outside the production area, are out-year efforts that need not and probably should not be discussed now with the regulatory agencies.

On a related note, the FEMP currently uses pipe crawler cameras, via a subcontract, to regularly inspect the OSDF leachate lines. In the future similar monitoring opportunities may be available.

Miamisburg Environmental Management Project (MEMP)

(The following was provided by Dick Neff)

Following are the estimates for underground piping at Mound that would be amenable to application of the pipe explorer. These numbers do not include the hot waste lines (scheduled for removal) or the storm and sanitary lines that are likely contaminated with Pu-238.

Sanitary sewer lines - 16000 lineal feet
Storm sewer lines - 34000 lineal feet

West Valley Demonstration Project (WVDP)

(The following was extracted from email discussions among Drake, Choroser and Kocialski)

The STCG had looked at the use of the Pipe Explorer the site once before. They noted that the pipe explorer technology is in the STCG database (#T06-004-01), and is in the pending category and it is not a priority issue for the site. They noted that 'pending category' indicated that they'll look into it later, or they have looked into it a little, but haven't found a potential application in the near term.

The site noted that removal or characterization of underground piping is primarily a long-term, EIS related issue for WVDP and therefore is not currently being addressed. There may be potential applicability in the D&D arena for their characterization needs (alpha emitting radionuclides) but are unsure as to the capability of the equipment in this area.

They also noted that the cost savings estimate that are trying to be derived are part of the EIS process for the WVDP and that there is little utility (and some danger) in putting forth the effort to do the estimate at this time.

Subsequently they have determined that there is no near term application for the Pipe Explorer. At this time they are reluctant to require the D&D folks to provide underground piping estimates for piping removal, as this has not yet been determined in the EIS effort for the site.

Summary

The cost savings realized by the CEMP as a result of using the pipe explorer was estimated at \$5.2 million for the 3700 lineal feet of pipe not requiring excavation and disposal. This translates into approximately \$1400 per linear foot of pipe left in the ground as uncontaminated and not requiring excavation and disposal. Based on the responses from the four other OH sites, only the AEMP and MEMP offer near term opportunities for deployment of the pipe explorer.

The initial total estimated amount of underground pipe amenable to the pipe explorer is 54,000 lineal feet. Based on this gross estimate, approximately \$75 million dollars in cost avoidance could be potentially realized. There are many variables that will reduce the estimated amount of pipe and the subsequent cost savings associated with these numbers, e.g., accessibility and contamination. However, it is important to understand that for every one percent (1%) of above total that is realized, a cost avoidance/savings of \$75,000 is actualized.

Summary Table	
AEMP	4,000 lineal feet
CEMP	Already deployed
FEMP	Not applicable
MEMP	50,000 lineal feet
WVDP	Not applicable at this time

Attachment A
Characterization & Delineation of Contaminants Area
C&DC Approach – Pipe Explorer

Based on our January 30th OCSG Meeting at the MEMP, the C&DC Team agreed to move forward on a strategic approach for deploying the pipe explorer at DOE-OH sites. Our first effort was to derive a 'rough-order-of-magnitude' estimate of underground piping at each site. This initial estimate hopefully should not require much effort for each site team member. A ballpark figure will do, as we will continue to refine this estimate as we proceed forward. Using this estimate, we will incorporate CEMP statistics (40% of piping amenable to the pipe explorer) to derive an estimate of pipe and potential cost savings (5.2 million per 3700 lineal feet or roughly \$1400 per foot of pipe we can leave in the ground).

STEP 1: Would you please provide us with an estimate of the total lineal feet of underground pipe (> 2 inch diameter) at your site and if possible break them down into the following three categories:

1. Storm Lines
2. Sewage Lines
3. Process Lines

The path forward is for each site representative to first provide a phase I estimate of the lineal feet of pipe within two weeks. Once we have this information, an approach will be presented to DOE-OH management identifying a relative value for cost savings that based on total lineal feet of underground pipe, multiple site deployment, and actual cost savings at the CEMP. Given a green light to proceed, the OCSG will refine estimates for each site, identify immediate and long-term deployment opportunities, and focus in on immediate projects for deployment of the pipe explorer during FY 2001.

STEP 2: As a team we need to come to consensus on a strategic and systematic approach for deploying the pipe explorer. I have identified a number of steps for such an approach. We can use this as a starting point to solicit input from the C&D team for our path forward.

Underground Pipe Estimates

Step 1. Estimate the total amount of underground lines at your site and categorize them as 1) storm, 2) sewage, or 3) process.

Step 2. Refine this total by subtracting the any lines that are known to contain contaminants or concentrations that are not amenable to detection by the pipe explorer

Step 3. Further refine this total by subtracting any lines that are scheduled to be excavated anyway as part of D&D

Cost Savings Estimate

Step 1. Identify a rough order-of-magnitude estimate on baseline costs associated with excavation, processing (cutting) and disposal of these lines at your site

Step 2. Compare this estimate across the sites and the cost saving estimate provided by CEMP

Step 3. Derive a cost savings estimate per lineal foot of pipe within DOE-OH

**Logistics for Deploying the Pipe Explorer within DOE-OH for FY 2001 and maybe
FY 2002**

Step 1. Identify current baseline schedules for D&D activities at each site for FY
2001/2002

Step 2. Identify amount of underground piping associated with these D&D activities

Step 3. Combine these estimates and schedules for the five sites and derive a schedule for
proposed deployments of the pipe explorer during FY 2001/2002

Funding Logistics

Step 1. Identify baseline budgets associated with selected D&D projects

Step 2. Estimate amount of baseline budget associated with underground pipe

Step 3. Identify current OST and P2 funding available for P2/Technology deployment
efforts in FY 2001/2002.

Step 4. Derive cost-sharing approach for deployment